

## ABSTRACT

[0048] An optical sensor that includes multiple filter cavities for the simultaneous, co-located measurement of pressure and a temperature in a single structure. The sensor may include a single launch fiber bonded to a tube a pre-determined distance from a reflective fiber. The end of the reflective fiber not encased within the tube is enclosed within a cap formed of a material that has a refractive index that changes with changing temperature. Alternatively, a material having a refractive index that changes with changing temperature can be inserted into the tube to take the place of the reflective fiber. Multiple launch fibers may be incorporated within a tube.